

REMARKS

Claims 1, 18, 35, 108, 252, 261, and 270 - 276 are amended, no claims are canceled, and claims 277-278 are added; as a result, claims 1-52, 108-126, 136-154 and 252-278 are now pending in this application.

Applicant does not admit that the cited references are prior art and reserves the right to “swear behind” each of the cited references as provided under 37 C.F.R. 1.131.

Claim Objections

Claims 1, 18, 108, 252, 270, and 272-274 were objected to because of informalities. Applicant respectfully traverses these objections. However, to move the application to allowance, Applicant has amended the claims herein to recite that the reflow temperature is in a range of between 200 to 280 °C, as discussed in the present specification at least at page 3, line 29 and page 7, line 20. In view of the claims amendments Applicant respectfully submits that claims 270 and 272-274 have no further objections or rejections, and are in condition for allowance.

§102 Rejection of the Claims

Claims 1 and 11 were rejected under 35 USC § 102(b) as being anticipated by, or in the alternative, under 35 USC § 103(a) as being obvious over Yamamoto et al. (U.S. Patent No. 6,265,782) in view of Taguchi et al. (U.S. Patent No. 6,429,372).

Claims 1 and 11 were rejected under 35 USC § 102(b) as being anticipated by Yamamoto et al. Applicant respectfully traverses these rejections. Yamamoto has features that have been discussed in previous responses.

Applicant submits that claim 1, as amended herein, is patentably distinct over the cited references at least because it recites “...*a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280 °C, attaching the die to the substrate ...*”, which combination of features is neither described nor suggested by the cited references. Applicant respectfully submits that the cited reference of Yamamoto teaches away from a die attach material that is less than 3 megapascals (see column

3, lines 33-34). Since anticipation requires that each and every feature of the claim be found in a single reference, and it is clear from the examples given above that the cited Yamamoto reference actively teaches away from the claimed feature, then Applicant submits that Yamamoto is an inappropriate reference for either anticipation, since it does not disclose the recited feature, or for obviousness, since it actively teaches away from using the claimed range.

The cited reference of Taguchi appears to disclose a method of surface mounting an IC chip that has a resin hangover region to a tape that is larger than the IC chip in order to provide more solder ball attachments than could be attached to the IC chip alone. Taguchi further states that the temperature range is from 100 °C to 250 °C (see column 14, line 13). Applicant submits that Taguchi also fails to teach either the elasticity or the temperature range, and teaches against using the claimed range, at least at column 2, lines 57 to 65, where it teaches that anything less than 1 MPa causes the die to fall off of the tape, in Figure 14, where it shows that less than 1MPa is “of no use”, in Figure 15, where it shows substantial failures at less than 38 MPa levels, and at column 14, lines 8-17, where it teaches that if the adhesive is not “at least 1 MPa” then the wire bonds to the tape have inadequate strength. Applicant submits that the cited reference fails to teach the claimed combination of features, and teaches away from the recited features, and thus is an inappropriate anticipation reference, and can provide no motivation to change its teaching to obtain the present claimed invention since it teaches away from the claimed ranges.

Applicant submits that even if the suggested combination did result in the claimed invention, there still would be no motivation to make the combination since both disclose the use of adhesive tape attach methods, which could not motivate one of ordinary skill in the art to combine them to obtain a curable die attach material such as the claimed material.

Applicant respectfully submits that claim 11 depends upon claim 1, and further recites that the material is a polyimide, and is thus believed to be patentable at least as depending from a claim shown above to be patentable over the cited reference. In view of the above, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

§103 Rejection of the Claims

1. Claims 1, 2, 9, 11, 12, 13, 108, 118, and 120-122 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782, "Yamamoto") in view of Taguchi et al. (U.S. 6,429,372, "Taguchi"). Applicant respectfully traverses this rejection.

The cited references of Yamamoto and Taguchi have features discussed above with reference to the previous rejection.

Applicant respectfully submits that claim 1, as amended herein, is patentably distinct over any combination of the cited references at least because it recites "...a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280°C, attaching the die to the substrate ...", which combination of features is neither described nor suggested by the cited references.

Applicant submits that a prima facie case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. See MPEP 2144.05 and *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997). Applicant submits that both cited references teach away from the claimed combination of features by stating that the results are bad. The Yamamoto reference teaches away from the Young's modulus at least at column 3, lines 33-34; column 14, lines 26-30; column 27, lines 52-56; and column 31, lines 44-49, where the reference states that the modulus must be from 3 to 50 MPa or else the handling properties are poor. The Taguchi reference would strongly suggest to one of ordinary skill in the art that certain modulus materials are poor at least in Figure 15, where it shows failures at 38 MPa levels, as compared to the recited 0.1 to 3 MPa of the claim. Thus neither reference describes or suggests at least the claimed modulus range, and both clearly suggest staying away from the claimed arrangement.

Applicant respectfully submits that claim 108, as amended herein, is patentably distinct over any combination of the cited references at least because it recites "...a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280°C, attaching the die to the substrate ...", which combination of features is neither described nor suggested by the cited references. The reasoning is substantially similar to that given above with respect to claim 1.

The dependent claims 2, 9, 11, 12, 13, 118, and 120-122 are believed to be in patentable condition at least as depending upon claims shown above to be patentable over the same suggested combination of references, and further as containing additional patentable features over the base claims. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

2. Claims 3-6 and 110-114 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view of Yew et al. (U.S. 6,049,129) and Yamagata (U.S. 5,552,637). Applicant respectfully traverses this rejection.

The cited references of Yamamoto and Taguchi have features discussed above. The cited reference of Yew is used in the outstanding Office Action to show that adhesively bonded/encapsulated IC packages include memory, DRAM and logic circuits. The cited reference of Yamagata is used in the outstanding Office Action to show that adhesively bonded IC package/modules at known in information processing/communication devices.

Applicant respectfully submits that neither Yew nor Yamagata provide any teaching or suggestion to cure the failures of the suggested Yamamoto and Taguchi combination discussed above with reference to the prior rejection of independent claims 1 and 108. Specifically, the independent claims recite “...a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280 °C, attaching the die to the substrate ...”, which combination of features is neither described nor suggested by the cited references, whether taken alone or in any combination with each other or other well known art. Yamamoto reference teaches that the modulus must be from 3 to 50 MPa or else the handling properties are poor. The Taguchi reference strongly suggests that low modulus materials are poor, and seems to suggest 38-440 MPa elasticity for best performance.

The dependent claims 3-6 and 110-114 are believed to be in patentable condition at least as depending upon claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

3. Claims 7, 8, 10, 14, 15, 115-117, 119, 123, and 124 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view of Oxman et al. (U.S. 6,395,124). Applicant respectfully traverses this rejection.

The cited references of Yamamoto and Taguchi have features discussed above. The cited reference of Oxman is used in the outstanding Office Action to show that an adhesively bonded IC package having epoxy resin compositions/formulations comprising epoxides, polyepoxides, monoolefins, diolefins, or polyolefins in the final cured composition are known.

Applicant respectfully submits that the cited reference of Oxman does not provide any teaching or suggestion to cure the failures of the suggested Yamamoto and Taguchi combination discussed above with reference to the prior rejection of independent claims 1 and 108.

Specifically, the independent claims recite “...a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280°C, attaching the die to the substrate ...”, which combination of features is neither described nor suggested by the cited references, whether taken alone or in any combination with each other or with Oxman.

Dependent claims 7, 8, 10, 14, 15, 115-117, 119, 123, and 124 are believed to be in patentable condition at least as depending upon claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

4. Claims 16 and 125 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view of Penry (U.S. 6,049,094). Applicant respectfully traverses this rejection.

The cited references of Yamamoto and Taguchi have features discussed above. The cited reference of Penry is used in the outstanding Office Action to show that conventional die attach material composition with a Shore A hardness of greater than about 70 is known. Applicant respectfully submits that the cited reference of Penry does not provide any teaching or suggestion to cure the failures of the suggested Yamamoto and Taguchi combination discussed above with

reference to the prior rejection of independent claims 1 and 108. Specifically, the independent claims recite “...*a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280°C, attaching the die to the substrate ...*”, which combination of features is neither described nor suggested by the cited references, whether taken alone or in any combination with each other or with Penry.

Since it has been shown above that the suggested combination of references does not describe or suggest the features of independent claims 1 and 108, then it is submitted that dependent claims 16 and 125 are in patentable condition at least as depending upon claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

5. Claims 35, 36, 44, 46-48, 52, 136, 146, 148-150, and 154 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) in view of Narita (U.S. 6,144,107). Applicant respectfully traverses this rejection.

The cited reference of Yamamoto is discussed above. The cited reference of Narita is used to show that an epoxy resin having a Shore D hardness of around 85 is known. The Narita reference discloses an optical device in a solid transparent package. The package has the chip 3 attached to the flexible substrate 1a by a silicone adhesive with a Shore D hardness of between 0 and 30. See column 6, lines 24-39. The adhesive is stated to have flexibility at column 4, line 27, and is covered by a covering member 7, formed of a “transparent resin having flexibility” (see column 4, line 32).

Applicant respectfully submits that independent claim 35, as amended herein, is patentably distinct over any combination of the cited references at least because it recites “...*integrated circuit package comprising: a rigid substrate; a die; and a rigid die attach material attaching the die to the substrate and having has a Young's modulus of over 0.1 megapascals at a solder reflow temperature of between 200 to 280°C ...*”, which combination of features is neither described nor suggested by the suggested combination of references.

As noted above the Yamamoto reference teaches materials with elasticity of from 3 to 50 MPa, and outstanding Office Action admits that Yamamoto does not teach the die attach material

being rigid. The Narita reference teaches that the die attach material is soft and flexible with a hardness of less than 30, and attaches the die 3 to the thin lead terminals 1. Neither teaches or suggests a rigid substrate or a rigid die attach material. Thus independent claim 35 has features that are not found in either of the suggested references. Further, even if the claimed combination of references were to be found in one or the other of the suggested references, there is no suggestion in either reference to direct one of ordinary skill to combine an optical transparent package of Narita with the double coated adhesive film of Yamamoto.

Applicant respectfully submits that independent claim 108, as amended herein, is patentably distinct over any combination of the cited references at least because it recites “...*a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280°C, attaching the die to the substrate ...*”, which combination of features is neither described nor suggested by the suggested combination of references. As discussed above, the Yamamoto reference teaches that the modulus must be from 3 to 50 MPa or else the handling properties are poor. Narita is not seen as providing the missing part of the Yamamoto reference for the reasons given above.

Dependent claims 36, 44, 46-48, 52, 136, 146, 148-150, and 154 depend from claims 35 and 108, just discussed above. Applicant submits that the dependent claims are in patentable condition at least as depending upon base claims shown above to be patentable over the suggested combination of references. Applicant respectfully requests that this rejection be reconsidered and withdrawn.

6. Claims 17 and 126 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view Narita (U.S. 6,144,107). Applicant respectfully traverses this rejection.

The cited references of Yamamoto, Taguchi and Narita have features discussed above. The cited reference of Narita is used in the outstanding Office Action to show that a cured resin having a Shore D hardness of around 85 is known.

Applicant respectfully submits that Narita does not provide any teaching or suggestion to cure the failures of the suggested Yamamoto and Taguchi combination discussed above with

reference to the prior rejection of independent claims 1 and 108, from which claims 17 and 126 depend. Specifically, the independent claims recite “...a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280°C, attaching the die to the substrate ...”, which combination of features is neither described nor suggested by the cited references, whether taken alone or in any combination with each other or other well known art. As noted above, the Yamamoto reference appears to teach that the modulus must be from 3 to 50 MPa or else the handling properties are poor. The Taguchi reference strongly suggests that low modulus materials are poor, and it overall suggests 38-440 MPa elasticity for best performance.

The dependent claims 17 and 126 are believed to be in patentable condition at least as depending upon claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

7. Claims 18, 26, 28-30, 252, 260, 261 and 263 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129) in view of Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372) and Satsu et al. (U.S. 6,225,418). Applicant respectfully traverses this rejection.

The features of the Yew reference have been discussed above and include a die 50 attached on its top surface to a bottom surface of a PC board 76 by a double sided adhesive tape 60, typically made of polyimide. The features of the Yamamoto reference have been discussed previously, and include that Yamamoto describes an elastic modulus of from 3 to 50 MPa. (See Yamamoto at column 3, lines 33-34). Taguchi has been discussed above and is used in the outstanding Office Action to show that 1 MPa elasticity is known. Applicant has discussed above that Taguchi states that 1 MPa is too low and suggests in Figures 14 and 15 and in column 14 that ranges above or around 10 to 440 have the best results. The Satsu reference is used in the outstanding Office Action to show that various properties of die attach materials are known.

Applicant respectfully submits that claim 1, as amended herein, is patentably distinct over any combination of the cited references at least because it recites “...a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder

reflow temperature of between 200 to 280°C, attaching the die to the substrate ...”, which combination of features is neither described nor suggested by the cited references. The reasoning is similar to that given above with reference to the prior rejections. Applicant submits that there is nothing in Yew discussing the elasticity of the die attach material, and Yamamoto teaches away from the claimed arrangement.

Claim 252 also recites the same claim language as claim 1, and further recites “... *a material having a coefficient of thermal expansion α_2 of between about one and about sixty-two ppm/°C attaching the die to the substrate, wherein the material has a Young’s modulus of between .1 megapascals and less than 3 megapascals ...*”, which is not found in the suggested combination of references. The outstanding Office Action suggests in section 12 on page 13 that the Yew or Yamamoto reference teaches the recited ranges and references column 4. Applicant submits that the cited section of Yew discloses a material with a modulus of 1300 MPa, which is not in the recited range, and Yamamoto has been shown above to teach away from the claim. The cited references of Taguchi and Satsu do nothing to cure the above noted failure of the Yew and Yamamoto references to describe or suggest the above noted claim features.

In view of the above, Applicant respectfully submits that independent claims 1 and 252, as amended herein, over the suggested combination of references. Claims 18, 26, 28-30, 260, 261 and 263 depend from claims 1 and 252, and are held to be in patentable condition at least as depending from base claims shown above to be patentable over the same combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

8. Claim 109 was rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to 108 above, and further in view Kunitomo et al. (U.S. 5,550,408). Applicant respectfully traverses this rejection.

The Kunimoto reference is used in the outstanding Office Action to show that it is known to have a laminated ceramic substrate. Applicant submits that Kunimoto does nothing to cure the above noted failure of Yamamoto and Taguchi to describe or suggest the features of claim 108, upon which claim 109 depends. Applicant respectfully requests that this rejection be reconsidered and withdrawn.

9. Claims 19 and 253 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 252 above, and further in view of APA. Applicant respectfully traverses this rejection.

The APA is used in the outstanding Office Action to show that it is known to use conventional substrates and boards made from a glass-epoxide and ceramic. Applicant submits that the APA does nothing to cure the above noted failure of Yamamoto and Taguchi to describe or suggest the features of claims 1 and 252, upon which claims 19 and 253 depend. Applicant respectfully requests that this rejection be reconsidered and withdrawn.

10. Claims 20-23 and 254-257 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 252 above, and further in view of Yamagata (U.S. 5,552,637). Applicant respectfully traverses this rejection.

The cited reference of Yamagata is used in the outstanding Office Action to show that adhesively bonded IC packages are used in information processing devices. Applicant submits that Yamagata does nothing to cure the above noted failure of Yamamoto, Yew and Taguchi to describe or suggest the features of claims 1 and 252, upon which claims 20-23 and 254-257 depend. Applicant respectfully requests that this rejection be reconsidered and withdrawn.

11. Claims 24, 25, 27, 31, 32, 258, 259, 262, and 264-267 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18, 252, and 261 above, and further in view of Oxman et al. (U.S. 6,395,124). Applicant respectfully traverses this rejection.

The cited reference of Oxman is used in the outstanding Office Action to show that adhesively bonded IC packages use epoxides, diepoxides, polyepoxides, monoolefins, diolefins and polyolefins. Applicant submits that Oxman does nothing to cure the above noted failure of Yamamoto, Yew, Satsu and Taguchi to describe or suggest the features of claims 1 and 252,

upon which claims 24, 25, 27, 31, 32, 258, 259, 262, and 264-267 depend. Applicant respectfully requests that this rejection be reconsidered and withdrawn.

12. Claims 33 and 268 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 261 respectively above, and further in view of Penry (U.S. 6,049,094). Applicant respectfully traverses this rejection.

The cited reference of Penry is used in the outstanding Office Action to show that a conventional die attach material having a Shore A hardness of about 80 is known. Applicant disagrees, and notes that there is nothing in Penry, which is seen as teaching a soft adhesive layer in a package for an optical device, which may be properly combined with the other cited art to obtain the features of base claims 18 and 252, as discussed above. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

13. Claims 34 and 269 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 261 respectively above, and further in view of Narita (U.S. 6,144,107). Applicant respectfully traverses this rejection.

The cited reference of Narita is used in the outstanding Office Action to show that the use of a die attach material having a Shore D hardness of greater than 20 is known, and that this would provide “the desired flexibility” for the suggested combination of other references. Applicant submits that having a greater hardness does not provide improved flexibility as suggested by the Office Action, and thus the suggested combination fails. Applicant further submits that Narita does nothing to cure the above noted failure of Yew, Yamamoto, Taguchi and Satsu to describe or suggest the features of base claims 18 and 261, which recite “...a material having a coefficient of thermal expansion α_2 of between about 151 (one-hundred and fifty-one) and about 400 (four-hundred) ppm/ $^{\circ}$ C attaching the die to the substrate, wherein the material has a Young’s modulus of between .1 megapascals and less than 3 megapascals, at a solder reflow temperature of between 200 to 280 $^{\circ}$ C ...”, as amended herein.

Therefore, Applicant submits that base claims 18 and 261 are patentable as amended herein, and claims 34 and 269 are in patentable condition at least as depending upon base claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

14. Claims 37-41 and 139-142 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claims 35 and 136 respectively above, and further in view of Yew et al. (U.S. 6,049,129) and Yamagata (U.S. 5,552,637). Applicant respectfully traverses this rejection.

Yamagata is used in the outstanding Office Action to show that various communication, logic, processor or logic circuits are known to use adhesively bonded IC packages. Applicant submits that Yamagata does nothing to cure the above noted failure of Yamamoto, Narita and Yew to describe or suggest “...*a rigid die attach material attaching the die to the substrate* ...”, as recited in claim 35 and 136. The reasoning is similar to that given above with reference to prior rejections of these claims.

Applicant respectfully submits that the base claims 35 and 136 have been shown above to be patentable over the suggested combination of references, and thus the dependent claims 37-41 and 139-142 are in patentable condition at least as depending upon base claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

15. Claims 42, 43, 45, 49, 50, 143, 144, 145, 147, 151, and 152 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claims 35 and 136 above, and further in view of Oxman et al. (U.S. 6,395,124). Applicant respectfully traverses this rejection.

The cited reference of Oxman is used in the outstanding Office Action to show that die attach material including polyepoxide and polyolefin are known. Applicant submits that there is nothing in Oxman, as discussed previously, to cure the failure of the suggested combination of references to describe or suggest “...“...*a rigid die attach material attaching the die to the substrate* ...” ...”, as recited in base claims 35 and 136.

Applicant respectfully submits that the base claims 35 and 136 have been shown above to be patentable over the suggested combination of references, and thus the dependent claims 42, 43, 45, 49, 50, 143, 144, 145, 147, 151, and 152 are in patentable condition at least as depending upon base claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

16. Claims 51 and 153 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claims 35 and 136 respectively above, and further in view of Penry (U.S. 6,049,094). Applicant respectfully traverses this rejection.

The features of the cited references have been discussed above. Penry is used to show that a Shore A hardness of greater than about 70 is known. Applicant submits that that there is nothing in Penry, as discussed previously, to cure the failure of the suggested combination of references to describe or suggest "...*...a rigid die attach material attaching the die to the substrate ...*" ..., as recited in base claims 35 and 136.

Applicant respectfully submits that the base claims 35 and 136 have been shown above to be patentable over the suggested combination of references, and thus the dependent claims 42, 43, 45, 49, 50, 143, 144, 145, 147, 151, and 152 are in patentable condition at least as depending upon base claims shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

17. Claim 137 was rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claim 136 above, and further in view of Kunitomo et al. (U.S. 5,550,408). Applicant respectfully traverses this rejection.

Kunitomo is used in the Office Action to show that multi metal layer ceramic substrates are known. Applicant submits that that there is nothing in Kunitomo, to cure the failure of the suggested combination of references to describe or suggest "...*...a rigid die attach material attaching the die to the substrate ...*" ..., as recited in base claim 136.

Applicant respectfully submits that dependent claim 137 is in patentable condition at least as depending upon base claim 136 shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

18. Claim 138 was rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claim 136 above, and further in view of APA. Applicant respectfully traverses this rejection.

The APA is used to show that germanium is a known semiconductor material. Applicant submits that there is nothing in the APA, to cure the failure of the suggested combination of references to describe or suggest "...*a rigid die attach material attaching the die to the substrate* ..." as recited in base claim 136.

Applicant respectfully submits that dependent claim 138 is in patentable condition at least as depending upon base claim 136 shown above to be patentable over the suggested combination of references. In view of the above discussion, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Allowable Subject Matter

Claims 271, 275, and 276 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant has amended the claims to be in independent form, and requests that claims 271, 275 and 276 be passed to issue.

Claims 270 and 272-274 were indicated to be allowable if rewritten to overcome the objections set forth in the Office Action. Applicant has amended the claims herein to recite that the reflow temperature is in a range of between 200 to 280 °C, as found in the specification at least on pages 3 and 7. Applicant believes that the claims amendments respond to the objection and requests that the objection be withdrawn and claims 270 and 272-274 be passed to issue.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, David Suhl at 508-865-8211 or the undersigned to facilitate prosecution of this application. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

TONGBI JIANG ET AL.

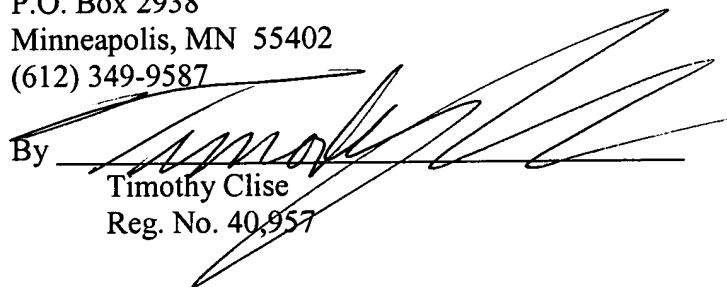
By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 349-9587

Date

16 May '05

By


Timothy Clise
Reg. No. 40,957

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 16th day of May, 2005.

Name

Tina Kohut

Signature

ZU